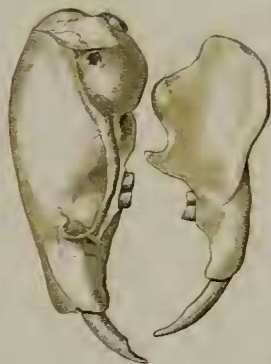


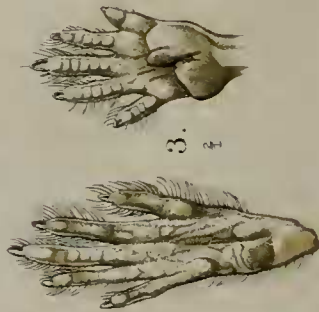
1. ♀



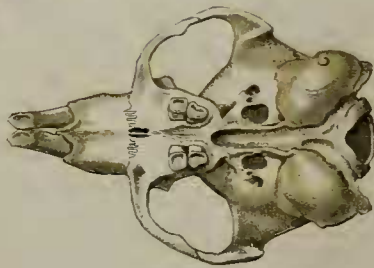
2.



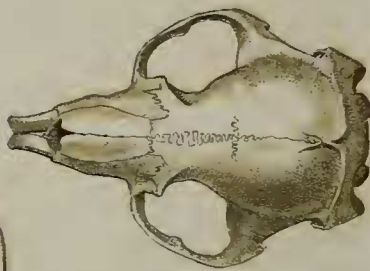
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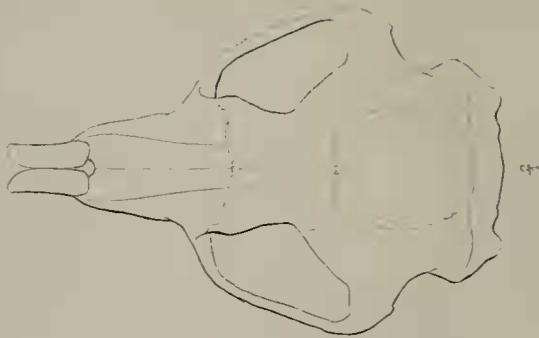
♀



4. ♀



5.



♀

2. Notes on the Rodent Genus *Heterocephalus*. By OLDFIELD THOMAS, F.Z.S., Natural History Museum.

[Received October 30, 1885.]

(Plate LIV.)

On the 16th of June last I had the pleasure of exhibiting to the Society a specimen obtained on the 29th of January last by Mr. E. Lort Phillips, F.Z.S., at Gerlogobie, Ogardain, Central Somali-land, which I doubtfully referred to *Heterocephalus glaber*, Rüpp., a species discovered by Martin Bretzka in Shoa, Abyssinia, more than forty years ago, and still, so far as I can ascertain, only represented by the original type described by Dr. Rüppell.

By the kindness of the Directors of the Senckenberg Museum in Frankfort I have been allowed to have this original type for examination, and I am thus enabled to give the following notes on the characters and differences of the two species which a comparison of these two specimens proves the genus to consist of.

The second species has been already named and briefly defined in a footnote to the Report in our 'Proceedings' of the exhibition of the specimen¹; and it was with much pleasure that I connected with this very interesting animal the name of its discoverer, to whom we are indebted for many additions to our knowledge of the mammals and other animals of Central Somali-land.

The type of *Heterocephalus glaber* consists of a dried and mounted skin, with a separate skull, while that of *H. phillipsi* is an adult female preserved in spirit; and I am therefore able to give a somewhat fuller and more exact description of its characters than Rüppell had any opportunity of doing.

Heterocephalus phillipsi is a peculiar-looking little creature, about the size of a Common Mouse, but looking almost more like a tiny hairless puppy on account of its nearly naked skin, small eyes, and peculiar physiognomy (see Plate LIV. fig. 1).

The head is small and flattened from above downwards. The mouth has the structure characteristic of *Georychus* and other burrowing Rodents, the external skin passing right across the mouth-opening inside the incisors. The lips and sides of the muzzle are fairly well clothed with bristly hairs, which form well-marked whiskers, and there are four or five hairs on each side springing from a wart on the side of the face. The eyes are well-defined open slits, with thickened fleshy lids covering the minute eyeballs, which are barely half a millimetre in diameter. The ears are simple round holes, not covered in any way, and unprovided with any trace of an ear-conch. The skin all over the head and body is of a wrinkled warty nature; but this is perhaps partly due to the action of the spirit on the naked skin, as the dried specimen of *H. glaber* shows it much less markedly. The head and body, although apparently

¹ P. Z. S. 1885, p. 612.

naked, are seen on closer inspection to be furnished all over with fine scattered hairs, which give no general appearance of a hairy covering, being so fine and so nearly the colour of the skin as to be almost invisible.

The tail is rather more than half the length of the body without the head, tapers rapidly from its broad and flattened base to its tip, and is thinly covered with fine bristly hairs similar in character to those on the muzzle.

The feet of *Heterocephalus* (Plate LIV. fig. 3) are by far its most highly specialized parts, as might, indeed, be expected in so purely burrowing an animal. The anterior pair are large and strong, and the toes are much longer in proportion to the palm than is the case in *Georychus*. On the proximal half of the palm there are two unusually large and well-developed pads, the rest of the palm being quite smooth; in *Georychus* the pads are quite rudimentary. The pollex, though short, is fully developed and is provided with a minute pointed claw; the fingers are broad and flattened and are provided with similar small conical claws. The third toe is the longest, the second and fourth are about equal, and the fifth, without its claw, reaches to about the middle of the first phalanx of the fourth, and the pollex to the level of the base of the second.

The hind feet, like the fore, have rather long toes in proportion to their length of sole, and in the same way the foot-pads on the sole are restricted to its posterior half, there being only three pads, two near the heel and the third at the base of the fifth toe (Plate LIV. fig. 3). The toes have much the same proportions as those on the fore feet, except that the hallux is relatively longer than the pollex, and the second toe is slightly longer than the fourth.

The most noticeable character of the feet, however, and one quite unique among burrowing Rodents, is the presence of fringes of fine bristles round their edges. These bristles are not unlike those on the hind feet of the Water-Shrew (*Crossopus fodiens*), except that they are longer, further apart, and far finer. They grow all round the edge of each toe, and pass backwards along the sides of the feet to the wrists and ankles, although there is a gap in the series where one would suppose that they would be most wanted, viz. along the outer side of the fifth hind toe, where they are quite absent and have perhaps been worn off. The value of these cilia, by which the spread of the foot is largely increased without any increase in cumbrousness, to an animal which passes its life burrowing in a light sandy soil, is sufficiently obvious to need no comment.

I am unfortunately unable to make out the number of the mammæ, as, owing no doubt to our specimen having been captured out of the breeding-season, they are so small as to be only in one or two instances distinguishable from the minute warts with which the animal's naked skin is covered.

The small intestine measures about 115 mm., the short rounded cæcum about 12 mm., and the combined colon and rectum about 67 mm., 58 per cent. of the small intestines.

The palate-ridges (Plate LIV. fig. 2) consist apparently of about

four pairs of small, rounded elevations; but they are so vaguely defined that their exact number is not easily determinable.

The skull of *H. phillipsi* (Plate LIV. fig. 4) is smooth and rounded, short in proportion to its size, with a broad flat brain-case and a very broad interorbital region. Compared to that of *H. glaber* its most striking characteristic is its very much smaller size, as is shown on the Plate (figs. 4 and 5), where the two skulls are drawn on the same scale. This difference in size is so marked that it is obvious at the first glance that the owners of these two skulls could not possibly belong to the same species, notwithstanding their extreme resemblance to each other externally.

In their general proportions also the two skulls differ noticeably, the facial portion of that of *H. phillipsi* being much shorter, in fact only about three quarters of the length of the brain-case, while in *H. glaber* the lengths of the face and brain-case are about equal.

The nasals of *H. phillipsi* are short and somewhat squarely truncated behind, and are surpassed posteriorly by the ascending processes of the premaxillæ, while in *H. glaber* they are more pointed behind, and are about equal in length to the premaxillary processes.

The anterior part of the zygomata, opposite the postorbital processes, is much more bowed out in *H. phillipsi* than in *H. glaber*.

On the underside of the skull the only difference appreciable is that the palatine foramina, minute in both, are still smaller in *H. phillipsi* than in *H. glaber*.

Passing to the teeth, we find a very remarkable distinction between the two animals. In *H. glaber* there are three round and simple molars in each jaw; but in *H. phillipsi* there are only two, both above and below, the tooth absent being apparently the first. In any other family this difference would be of generic importance; but in the present group analogous differences occur even in the same species, as for example in *Heliophobius argenteo-cinereus*, Peters, which, as its describer has recorded¹, sometimes has two and sometimes three premolars. And, again, *Georychus capensis*, Pall., has sometimes one and sometimes no premolar. For the present therefore too much stress must not be laid upon the difference between the only two specimens of *Heterocephalus* as yet examined, nor can *H. phillipsi*, in which there are only two molars, be said to be as highly specialized in this respect as *Hydromys*, otherwise the only Rodent with as few molars in each jaw. *H. phillipsi* has, in fact, no doubt, as a rule, the same number of molars as *H. glaber*, even if both do not sometimes have either one or two premolars developed in addition in front of the molars.

The teeth themselves are rounded and very simple, having each but one single external fold of enamel, which seems to disappear as time advances, as the specimen of *H. phillipsi*, apparently the more aged of the two, shows scarcely a trace even of this fold. The lower molars, at least of *H. phillipsi*, have each one external and one internal fold, and from Rüppell's description those of *H. glaber* are

¹ Reise n. Mossamb., Säug. p. 142, 1852.

similar ; but the lower jaw of the type of that species has unfortunately been lost.

The incisors, as in the allied genera, project nearly horizontally forward ; and their anterior faces are somewhat flattened and bevelled on their interior halves, so that, as they wear down, the resulting edge of the two incisors combined is more or less **W**-shaped, but with the outer arms of the **W** very much shorter than the inner.

Externally I can find no specific differences whatever, except in the greater size of the hind feet of *H. glaber*. It must, however, be remembered that in such a genus as *Heterocephalus*, in which there are neither ear-conchs, to vary in shape and size, nor hairs, to vary in colour and length, and where there is only one possible manner of life, there is very little room for the ordinary forms of specific variation as found in other genera of mammals.

The measurements of the type specimens of the two species are as follows :—

	<i>H. phillipsi</i> (♀ in spirit).	<i>H. glaber</i> (stuffed).
	mm.	mm.
Head and body ..	80	(c) 95
Tail	35	39
Hind foot	16·6	21·2
Forearm and hand	21·0	—
Head	21·5	—
Muzzle to ear ..	15·2	(c) 20·0
Muzzle to eye ..	7·0	—
Eye to ear	7·0	—

Skulls :—

	<i>H. phillipsi</i> .	<i>H. glaber</i> .
Occiput to tip of nasals.....	16·1	21·5
Occiput to tip of incisors	19·4	26·4
Basal length ¹	16·0	21·5
Greatest breadth	13·6	18·3
Brain-case, length	9·2	11·0
Brain-case, breadth	9·4	12·0
Nasals, length	5·1	7·8
Nasals, breadth	3·2	4·4
Interorbital breadth	5·1	6·0
Back of incisors to m ¹	5·7	8·0
Palatine foramina	1·1	2·3
Palatine foramina to posterior nares.	4·0	6·1
Basi-cranial axis	6·1	—
Palate, length	9·1	13·6
Palate, breadth outside m ²	4·3	5·0
Palate, breadth inside m ²	1·5	2·2
Palate, least breadth inside molars .	1·2	1·3
Incisors, breadth	2·1	2·9
Incisors, length	3·9	5·4

¹ From basion

Finally, as to the systematic position of *Heterocephalus*. It has been placed by Rüppell, Brandt, Alston, and others close to *Rhizomys* among the Spalacinae; but my examination of these two specimens proves unquestionably that it is a member of the other half of the family, namely the *Bathyerginae*, and that it is really very closely allied to *Georychus*, of which it may, in fact, be considered a sort of degraded representative, specialized for an entirely subterranean life. For such a life its hairless mole-shaped body, nearly suppressed eyes, and bristle-clad feet admirably adapt it, while, on the other hand, its deficiency both of protective covering and power of sight would be fatal to it were it to venture above ground, where it would be exposed to the fierce rays of an African sun, and to the attacks of the host of enemies which by its underground life it is enabled to escape. These deductions from the structural characters of *Heterocephalus* are fully borne out by the interesting notes on its habits contributed to the Society by Mr. Lort Phillips (suprà, p. 611).

EXPLANATION OF PLATE LIV.

- Fig. 1. *Heterocephalus phillipsi*; female, natural size.
 2. Palate-ridges.
 3. Fore and hind feet, showing sole-pads and fringing bristles. Twice natural size.
 4. Skull. Twice natural size.
 5. Skull of *H. glaber*. Twice natural size.

3. Characters of an apparently new Species of Tanager of the Genus *Calliste*. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

[Received October 4, 1885.]

In the series of skins acquired by the British Museum from the Gould Collection is a single specimen of what, after careful examination, I cannot avoid referring to a new species of *Calliste*. This I propose to dedicate to the great ornithologist to whom the type formerly belonged, as

CALLISTE GOULDI, sp. nov.

Supra lucide viridis, interscapulio nigro variegato; fronte et loris nigris; pileo antico et regione oculari nitide cæruleis; alis caudaque nigris lucido viridi marginatis; tectricibus alarum minoribus aurescente tinctis; subtus clare viridis, in ventris lateribus cærulescente lavata; mento nigro; macula magna gulam mediam occupante cærulescenti-nigra; ventre imo medio et crisso pallide fulvis; subalaribus albis; rostro nigro; pedibus pallide brunneis. Long. tota 4·8, alæ 2·7, caudæ 2·0.

Hab. Brasilia Merid. Or.

Obs. Species *C. thoracicæ* affinis, et colore corporis superioris fere